

# Stanford

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## Timothy Aloysius Machado

Postdoctoral Scholar, Bioengineering

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#### HONORS AND AWARDS

- K99 Pathway to Independence Award, NIH NINDS (2020-2025)
- AP Giannini Fellowship, AP Giannini Foundation (2018-2020)
- Stanford Dean's Fellowship Award, Stanford School of Medicine (2017-2018)
- Ruth L. Kirschstein National Research Service Award (Awarded, declined), NIH NINDS (2018)
- Kavli Award for Distinguished Research (for PhD thesis), Columbia University (2016)
- GRFP Fellow, National Science Foundation (2011-2014)
- IGERT Fellow, National Science Foundation (2009-2010)
- Departmental Honors (Cognitive Science), University of California San Diego (2007)
- Chancellor's Undergraduate Research Scholarship, University of California San Diego (2007)
- Provost's Honors, University of California San Diego (2005-2007)

#### BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Co-Founder and Advisor, CTRL-Labs (2015 - present)

#### PROFESSIONAL EDUCATION

- Bachelor of Science, University of California San Diego (2008)
- Doctor of Philosophy, Columbia University (2015)

#### STANFORD ADVISORS

- Karl Deisseroth, Postdoctoral Faculty Sponsor

### Publications

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#### PUBLICATIONS

- **Cortical Observation by Synchronous Multifocal Optical Sampling Reveals Widespread Population Encoding of Actions.** *Neuron*  
Kauvar, I. V., Machado, T. A., Yuen, E. n., Kochalka, J. n., Choi, M. n., Allen, W. E., Wetzstein, G. n., Deisseroth, K. n.  
2020
- **Cortical layer-specific critical dynamics triggering perception.** *Science (New York, N.Y.)*  
Marshel, J. H., Kim, Y. S., Machado, T. A., Quirin, S. n., Benson, B. n., Kadmon, J. n., Raja, C. n., Chibukhchyan, A. n., Ramakrishnan, C. n., Inoue, M. n., Shane, J. C., McKnight, D. J., Yoshizawa, et al  
2019

- **Primacy of Flexor Locomotor Pattern Revealed by Ancestral Reversion of Motor Neuron Identity** *CELL*  
Machado, T. A., Pnevmatikakis, E., Paninski, L., Jessell, T. M., Miri, A.  
2015; 162 (2): 338-350
- **Community-based benchmarking improves spike rate inference from two-photon calcium imaging data** *PLOS COMPUTATIONAL BIOLOGY*  
Berens, P., Freeman, J., Deneux, T., Chenkov, N., McColgan, T., Speiser, A., Macke, J. H., Turaga, S. C., Mineault, P., Rupprecht, P., Gerhard, S., Friedrich, R. W., Friedrich, et al  
2018; 14 (5): e1006157
- **Robust and scalable Bayesian analysis of spatial neural tuning function data** *The Annals of Applied Statistics*  
Rad, K. R., Machado, T. A., Paninski, L.  
2017; 11 (2): 598-637
- **Spinal Inhibitory Interneuron Diversity Delineates Variant Motor Microcircuits** *CELL*  
Bikoff, J. B., Gabitto, M. I., Rivard, A. F., Drobac, E., Machado, T. A., Miri, A., Brenner-Morton, S., Famojure, E., Diaz, C., Alvarez, F. J., Mentis, G. Z., Jessell, T. M.  
2016; 165 (1): 207-219
- **Simultaneous Denoising, Deconvolution, and Demixing of Calcium Imaging Data** *NEURON*  
Pnevmatikakis, E. A., Soudry, D., Gao, Y., Machado, T. A., Merel, J., Pfau, D., Reardon, T., Mu, Y., Lacefield, C., Yang, W., Ahrens, M., Bruno, R., Jessell, et al  
2016; 89 (2): 285-299
- **Clustered factor analysis of multineuronal spike data** *Advances in Neural Information Processing Systems 27 (NIPS 2014)*  
Buesing, L., Machado, T. A., Cunningham, J. P., Paninski, L.  
2014; 1
- **Efficient Coding of Spatial Information in the Primate Retina** *JOURNAL OF NEUROSCIENCE*  
Doi, E., Gauthier, J. L., Field, G. D., Shlens, J., Sher, A., Greschner, M., Machado, T. A., Jepsen, L. H., Mathieson, K., Gunning, D. E., Litke, A. M., Paninski, L., Chichilnisky, et al  
2012; 32 (46): 16256-16264
- **Fast Nonnegative Deconvolution for Spike Train Inference From Population Calcium Imaging** *JOURNAL OF NEUROPHYSIOLOGY*  
Vogelstein, J. T., Packer, A. M., Machado, T. A., Sippy, T., Babadi, B., Yuste, R., Paninski, L.  
2010; 104 (6): 3691-3704
- **Functional connectivity in the retina at the resolution of photoreceptors** *NATURE*  
Field, G. D., Gauthier, J. L., Sher, A., Greschner, M., Machado, T. A., Jepsen, L. H., Shlens, J., Gunning, D. E., Mathieson, K., Dabrowski, W., Paninski, L., Litke, A. M., Chichilnisky, et al  
2010; 467 (7316): 673-U54